

REMARKS

Claims 1, 3-16, and 22 are pending. Claims 19 and 20 have been deleted. Claims 1, 9, and 22 have been amended by replacing certain occurrences of the term “comprising” with the phrase “consisting essentially of”. Applicants believe no new matter has been introduced by way of these amendments, and that the 35 USC §112, first paragraph rejection is now moot.

The Examiner rejected claims 1-16 and 19-22 under 35 U. S. C. § 103. The Examiner relied upon the combination of Neff U. S. Patent 5,882,525 (hereinafter Neff), Bhattacharyya U. S. Patent 4,713,431 (hereinafter Bhattacharyya) and page 1, lines 29-33 of the present application. The Examiner takes the position that

“Patentees disclose a polymer which may contain [A]pplicants['] monomers ‘I’ at column 4, lines 47-58 and 4-80 parts per million of a ‘branching agent’ [calling Applicants’ attention to the paragraph bridging columns 3 and 4 of Neff] such as PEGDMA of molecular weight of 600 [calling Applicants’ attention to experiments 10 and 11 in column 9 of Neff]. The materials may be used as flocculants [and] agents for effluent in the treatment of sludges [calling Applicants’ attention to Neff, column 1, lines 10-39].”

The Examiner concedes that

“[t]here are no examples of a material produced by using patentees['] diallyl ammonium compounds in combination with [A]pplicants['] amounts of PEG dimethacrylate although patentees disclose that [A]pplicants['] amounts of branching agent which include PEGDMA may be used in amounts encompassing [A]pplicants’ in combination with monomers including [A]pplicants[']. Hence it would have been obvious to a practitioner having an ordinary skill in the art at the time of the invention to select [A]pplicants['] components in [A]pplicants['] amounts from the disclosure of the patent in the expectation of adequate results absent any showing of surprising or unexpected results.”

The Examiner continues:

“Patentees do not appear to disclose inverse emulsion polymerization as required by certain dependent claims. However, page 1, lines 29-33 of [A]pplicants['] specification discloses that the advantage of inverse emulsion polymerization is known in the art for increasing molecular weights of flocculating polymers. Hence use of inverse emulsion polymerization would have been obvious to a practitioner having an ordinary skill in the art at the time of the invention to confer the advantage of increased molecular weight absent any showing of surprising or unexpected results.”

The claims have now been amended to recite: “[w]ater soluble branched block copolymers * * * [that] consist essentially of polymeric backbone chains of quaternary ammonium units of general formula I * * * mutually linked together by poly(alkylene glycol) blocks, which consist essentially of units of general formula II * * * replacing individual units of general formula I” (claim 1); “preparation of water soluble branched block copolymers consisting essentially of the [free] radical polymerization of a quaternary diallylammonium compound of general formula III * * * and bis-acrylate esters or bis-methacrylate esters of poly(alkylene glycols) of general formula IV * * * [with] the proportion by mass of the compound of general formula IV amounting to between 0.01 and 20 % by weight based on the two starting compounds” (claim 9); and, “a method ... comprising adding to an aqueous system from which suspended solids have to be separated water soluble branched block copolymers that consist essentially of polymeric backbone chains of quaternary ammonium units of general formula I * * * mutually linked together by poly(alkylene glycol) blocks, which consist essentially of units of general formula II * * * replacing individual units of general formula I” (claim 22). These claims thus all adopt “consisting essentially of” terminology.

The cited references teach away from such combinations. Neff characterizes it as crucial that a chain-transfer-agent be added when the copolymers are produced (Neff, col. 5, l. 34). These chain-transfer-agents are thus also present in the resulting copolymer as co-monomer. Furthermore Neff’s examples always disclose the mixture of not just one, but two branching agents (see Neff’s table 1: 60/40-mixture of AMD and Q9), which further differentiates the claims as amended from Neff. Neff teaches that Neff’s invention will not work in absence of the chain-transfer-agent (see Neff, col. 5, l. 37). Contrary to the teachings of Neff, excellent yields as well as good water-soluble copolymers which favorably can be used as flocculation agents and coagulation agents can be obtained by the compositions of the present claims, despite the fact that no chain-transfer-agents are used in the compositions of the present claims.

Therefore, the present claims provide copolymers with simpler structures, and which eliminate at least one of Neff’s compounds. Accordingly, costs can be reduced, and hazardous chemicals, such as Neff’s described alcohols, acids, phosphates, and the like, can be avoided.

Applicants submit that pending claims 1, 3-16, and 22, as amended herein, distinguish patentably over the art of record, and respectfully request further favorable consideration, culminating in allowance. The Commissioner is hereby authorized to charge

any fees which may be necessary to constitute this a timely response to the March 3, 2009 official action, to our undersigned counsel's deposit account 10-0435, with reference to file number 127-75824.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Richard D. Conard", written in a cursive style.

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